

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

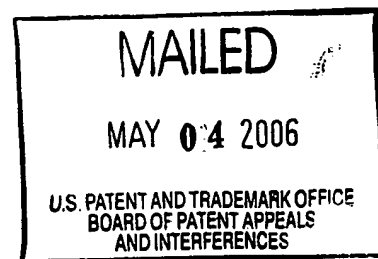
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MICHAEL B. BALL and CHAD A. COBBLEY

Appeal No. 2006-1040
Application No. 09/385,584

ON BRIEF



Before THOMAS, BLANKENSHIP, and SAADAT, Administrative Patent Judges.

BLANKENSHIP, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 33-37 and 41-56, which are all the claims remaining in the application.

We affirm.

BACKGROUND

The disclosed invention relates to a solder mask that is secured to an active surface of a substrate. Conductive material is disposed in, and shaped by, apertures in the solder mask to form conductive structures in communication with contact pads exposed to the apertures. (Abstract.) Representative claim 33 is reproduced below.

33. A pre-formed solder mask, comprising:

a film of mask material comprising a polymer and having a substantially uniform thickness; and

at least one open aperture formed through said film and located correspondingly within said film to a contact pad location of a substrate upon which the pre-formed solder mask is to be disposed, said at least one open aperture configured to define a peripheral shape of a conductive structure to be formed on said contact pad.

The examiner relies on the following reference:

| | | |
|--------------------------------|-----------|---------------|
| Schwiebert et al. (Schwiebert) | 5,672,542 | Sep. 30, 1997 |
|--------------------------------|-----------|---------------|

Claims 33-37 and 41-56 stand rejected under 35 U.S.C. § 103 as being unpatentable over Schwiebert.

We refer to the Rejection (mailed Jun. 14, 2002) and the Examiner's Answer (mailed Feb. 25, 2005) for a statement of the examiner's position and to the Brief (filed Nov. 15, 2002) and the Reply Brief (filed Apr. 25, 2005) for appellants' position with respect to the claims which stand rejected.

OPINION

Appellants submit that claims 33-37 and 41-56 should be grouped together, but claims 48 and 56 should be considered separately from “most generic” claim 33. Accordingly, consistent with the rules effective at the filing of the Brief, we select claims 33 and 48 as representative claims. See 37 CFR § 1.192(c)(7) (2002).

Appellants submit there is no suggestion or motivation to modify apertures 330 of Schwiebert to define a peripheral shape. (Brief at 9.) Instant claim 33 recites that at least one open aperture is “configured to define a peripheral shape of a conductive structure to be formed on said contact pad.” The rejection as it applies at least to claim 33, however, does not propose any modification of apertures 330 of the reference.

Figure 3B of Schwiebert shows paste-like formulation 334 placed in mask apertures 330. The formulation contains spherical metal powder and flux (col. 7, l. 60 - col. 8, l. 9). The formulation is described in detail at columns 8 and 9 of Schwiebert. The metal powder in the composition, at the least, is electrically conductive. At “least one” open aperture as shown in Figure 3B is configured to define a peripheral shape of a conductive structure to be formed on contact pad 322, which is sufficient to meet the broad terms of instant claim 33.

We have also considered appellants’ allegations in the briefs that the “peripheral shape” recitation distinguishes over the reference because of how a solder bump, shown as element 338 in Figure 3C of Schwiebert, relates to mask 326 and mask aperture 330. We do not find the arguments persuasive. Appellants claim a solder

mask that “is to be” disposed in relation to a substrate, with an aperture configured to define a peripheral shape of a conductive structure “to be formed” on the contact pad.

The limitations relating to structure, rather than use, of the solder mask, are compared to the prior art. See In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) (“It is well settled that the recitation of a new intended use for an old product does not make a claim to that old product patentable.”); In re Hack, 245 F.2d 246, 248, 114 USPQ 161, 162 (CCPA 1957) (“[T]he grant of a patent on a composition or machine cannot be predicated on a new use of that machine or composition.”).

Schwiebert discloses that the mask aperture dimensions are generally, but not necessarily, somewhat larger than the dimensions of the wettable region (contact pad). Col. 7, ll. 50-57. Schwiebert thus teaches that the mask aperture dimensions may be larger, smaller, or the same size as the corresponding contact pad. Schwiebert further teaches that the mask aperture is preferably cylindrical, but may consist of non-cylindrical shapes (col. 5, l. 66 - col. 6, l. 20). Appellants’ arguments relating to intended use of the solder mask fails to show that the product described by Schwiebert is any different from the product set forth by instant claim 33.

Nor are we persuaded by appellants’ arguments alleging that the preamble language of the solder mask being “pre-formed” distinguishes over Schwiebert. The reference discloses that the polymer embodiment of the mask is applied to the surface of the substrate, with the apertures formed thereafter. Col. 7, ll. 21-32. The solder

mask of Schwiebert becomes a solder mask when at least one open aperture is formed, consistent with the requirements of instant claim 33. As such, the solder mask of Schwiebert is formed prior to its use in the process of receiving paste-like formulation 334 and formation of solder bumps 338 (Figs. 3B and 3C), and is thus “pre-formed.”

Moreover, appellants have not shown that the implied process step of “pre-formed” appearing in the preamble requires the claimed product to differ in any way from the product described by the reference. Process steps per se cannot serve to limit product or apparatus claims. See In re Stephens, 345 F.2d 1020, 1023, 145 USPQ 656, 658 (CCPA 1965) (“We think it well settled that the presence of process limitations in product claims, which product does not otherwise patentably distinguish over the prior art, cannot impart patentability to that product.”). The relevant inquiry is how the process recitations might define structure. See, e.g., In re Garner, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1969) (recitation of “interbonded one to another by interfusion between the surfaces of the perlite particles” construed as structural limitation in product claim); In re Dike, 394 F.2d 584, 589, 157 USPQ 581, 585 (CCPA 1968) (no error in USPTO board holding that term “blow-molded” in claims drawn to integral plastic container and handle failed to distinguish over prior art, because term related to process of making the article, and was not definitive as to the structure of the article).

Appellants also argue, with respect to claim 48, that Schwiebert lacks any teaching or suggestion of an adhesive material to adhere a solder mask to a substrate. (Brief at 13.)

Claim 48 recites that the surface of the film includes an adhesive material. As the examiner indicates, the polymer mask of Schwiebert adheres to the surface of the substrate during its use, requiring removal by a solvent. Col. 7, ll. 21-32. The surface of the polymer mask that attaches to the substrate would seem to include an adhesive material; else, the mask would not stay in place during, for example, the “squeegee” step described by the reference (e.g., col. 7, l. 66 - col. 8, l. 9.) To the extent that claim 48 may require a substance in addition to those that comprise the film (a substance which, we note, would not be a part of the film or its surface), we agree with the examiner that the reference’s teaching that the mask remain attached to the substrate would have suggested use of an adhesive material to the artisan. In any event, appellants have not provided evidence or convincing reasoning to the contrary.

We thus sustain the rejection of claims 33-37 and 41-56 under 35 U.S.C. § 103 as being unpatentable over Schwiebert.


CONCLUSION


The rejection of claims 33-37 and 41-56 under 35 U.S.C. § 103 is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a). See 37 CFR § 1.136(a)(1)(iv).

AFFIRMED


JAMES D. THOMAS
Administrative Patent Judge


HOWARD B. BLANKENSHIP
Administrative Patent Judge

BOARD OF PATENT
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MAHSHID D. SAADAT
Administrative Patent Judge

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